Remarks

Reconsideration and allowance of this application, as amended, are respectfully requested.

Independent claims 20 and 21 have been amended to even more particularly define embodiments of the instant invention. Claim 17 has been canceled without prejudice or disclaimer. Claims 2-11, 14, 15, 18, 20, and 21 are now pending in the application. Claims 20 and 21 are independent. The sole rejection is respectfully submitted to be obviated in view of the amendments and remarks presented herein. No new matter has been introduced through the foregoing amendments.

Instant claim 20 defines a fire-retardant flat structural member configured as a composite body that includes, *inter alia*, "two veneer sheets with an intermediate layer of a core material located therebetween to provide the composite body."

Instant claim 21 defines a method of producing a fire-retardant flat structural member configured as a composite body. The method includes, *inter alia*, the steps of

(a) "providing at least two veneer sheets and an intermediate layer of a core material located therebetween to provide the composite body,"

(b) "disposing a resin film on each of the veneer sheets, the veneer sheets having pores," *and*

(c) "supplying heat to the veneer sheets such that (i) water bound in the pores of the veneer sheets evaporates and is exhausted from the pores thereof and (ii) the resin films are liquefied by the heat, the exhausting evaporated water drawing the liquefied resin films into the pores of the veneer sheets *by capillary action.*"

Certain of the dependent claims have been amended for consistency with instant claim 21.

Entry of each of the amendments is respectfully requested.

35 U.S.C. § 103(a) - Kelso and Sunol

Claims 2-11, 14, 15, 17, 18, 20, and 21 stand rejected under 35 U.S.C. U.S.C. § 103(a) as being unpatentable over GB 1 604 803 to Kelso, Jr. (hereinafter "Kelso") in view of the newly-applied U.S. Patent No. 4,992,308 to Sunol.

The Office Action now relies upon the Sunol patent for its asserted teaching that "it is known in the art to impregnate wood with polymer using pressure" (Office Action page 2). The Office Action states that "[i]t would have been obvious to one of ordinary skill in the art to add a temperature element in the first step of applying pressure in Kelso '803 method since such would improve impregnation process by removing water and other impurities contained in the wood" (Office Action page 2). The Office Action also asserts that "impregnation of wood with liquid resin instead

of water based solution would have been obvious to one having ordinary in view of the teachings disclosed in Sunol '308" (Office Action page 3).

The rejection of claims 2-11, 14, 15, 17, 18, 20, and 21 under § 103(a) based on Kelso and Sunol is respectfully deemed to be obviated. For at least the following reasons, the combined disclosures of Kelso and Sunol would not have rendered obvious Applicants' presently claimed invention.

The combined disclosures Kelso and Sunol do not teach each feature of Applicants' presently claimed invention. As explained in Applicants' Response filed August 13, 2009, Kelso teaches a method for wood preservation. For this purpose the wood to be preserved is placed in a pressure treatment vessel at an initial elevated pressure. Subsequently, an aqueous treatment liquid is introduced into the vessel at the elevated pressure so that the wood is fully immersed in the liquid. Then, the pressure is increased within the vessel to above the initial pressure so as to impregnate the wood with the treatment liquid. The increased pressure is maintained within the vessel so as to retain the treatment liquid in the wood at a temperature of at least 65°C for a specified period.

That is not Applicants' presently claimed invention. As indicated above in the introductory remarks, instant claim 21 defines a method of producing a fire-retardant flat structural

member configured as a composite body. The method includes, *inter alia*, "providing at least two veneer sheets and an intermediate layer of a core material located therebetween to provide the composite body." Kelso does not teach this. Kelso merely generally deals with the impregnation of wood.

Claim 21 also requires a step of "disposing a resin film on each of the veneer sheets, the veneer sheets having pores." Kelso does not teach this. In contrast, Kelso uses a liquid which is introduced into the vessel in which the wood is placed.

Applicants' claimed method also requires "supplying heat to the veneer sheets such that (i) water bound in the pores of the veneer sheets evaporates and is exhausted from the pores thereof and (ii) the resin films are liquefied by the heat, the exhausting evaporated water drawing the liquefied resin films into the pores of the veneer sheets *by capillary action*." That is, claim 21 requires supplying heat to the veneer sheets to evaporate the water bound in the pores of the veneer sheets and to remove the evaporated water from the pores. The aforementioned step enables the resin films, which are liquefied by the heat, to flow into the pores of the veneer. And, importantly, the exhausting evaporated water draws the liquefied resin films into the pores of the veneer sheets *by capillary action*. Kelso does not teach this.

More specifically, contrary to the Office Action's assertion, Kelso fails to disclose a heating step that removes liquid from the pores of the veneer sheets. Kelso discloses that

the wood is surrounded by the treatment liquid and that a pressure is supplied to force the treatment liquid into the pores of the wood. But, Kelso merely uses heat to accelerate the reaction between an aqueous treatment liquid and the wood to be impregnated. That is quite different from Applicants' claimed method, which requires a step of heating to (i) evaporate and exhaust the water bound in the pores of the veneer sheets and (ii) liquefy the resin films. As a result, the exhausting evaporated water draws the liquefied resin films into the pores of the veneer sheets by capillary action.

With regard to the applied pressure, in the present invention the pressure causes the evaporated water exhausted from the pores to flow out via the edges of the member. In contrast, Kelso uses the pressure to force the treatment liquid into the wood.

Therefore, none of the aforementioned features of Applicants' claimed invention is disclosed by Kelso.

As indicated above, the Office Action asserts that "impregnation of wood with liquid resin instead of water based solution would have been obvious to one having ordinary in view of the teachings disclosed in Sunol '308." But regardless of the veracity of that assertion, the disclosure of Sunol fails to rectify any of the above-described deficiencies of Kelso.

Furthermore, there is simply no teaching in the asserted Kelso/Sunol combination that would have led one to select the

references and combine them, let alone in a way that would produce the invention defined by Applicants' instant claim 21. Contrary to the assertions in the Office Action, a person having ordinary skill in the art who knows the teachings of Kelso and Sunol would not arrive at the presently claimed invention simply by "optimiz[ing] conditions of the process" (Office Action page 3).

Instead, a skilled person would have to recognize that it would be advantageous to (a) provide at least two veneer sheets and an intermediate layer of a core material located therebetween to provide the composite body, (b) dispose resin films on the veneer sheets, and (c) supply heat to the veneer sheets to remove the water from the pores of the veneer sheets and cause the resin to flow into the pores of the veneer sheets by capillary action.

Applicants' claimed method is particularly advantageous when applied in fields with a high security demand (see, e.g., specification page 3). In the aviation industry, the importance of composite materials is steadily rising, as these materials combine great strength with an impeccably light-weight construction. However, the composite materials must meet strict requirements in terms of flammability resistance properties.

With regard to providing fiber-reinforced composite materials with fire-retardant resins, see, e.g., the teaching of U.S. Patent Application Pub. No. 2010/0068518 of Honma et al. ("Honma"), paragraph [0168], disclosed in the Information Disclosure Statement filed concurrently herewith. Honma's method,

however, is not possible with Applicants' claimed fire-retardant flat structural member configured as a composite body, which has veneer sheets attached to a core material. Hitherto, no reliable and cost-effective technique has been known to ensure the fire-retardancy of the composite materials employed in Applicants' claimed method.

More specifically, the present invention makes it possible to produce such fire-retardant composite bodies in a fast and easy-to-implement manner. In particular, the individual layers of the composite body can be joined with the core material, while heat is supplied to the veneer sheets to exhaust water from the pores and draw in liquefied resin. Thus, final assembly and implementation of the fire-retardancy of the composite body can be achieved in the same process.

Accordingly, the combined disclosures of Kelso and Sunol would not have rendered obvious the invention defined by Applicants' instant claim 21. Claims 2-11, 14, 15, and 18 are allowable because they depend, either directly or indirectly, from claim 21, and for the subject matter recited therein. Product claim 20 is similarly allowable.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an

interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

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